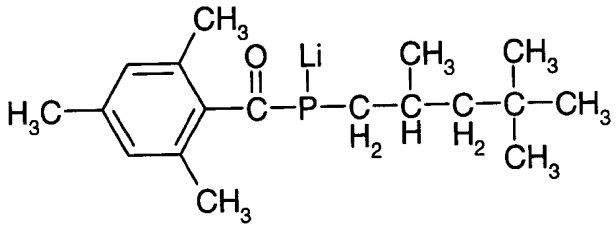
Remarks

Claims 1-18 are pending. The Examiner has entered a restriction requirement as between:

Group I – claims 1, 4, 5 and 6, drawn to an acylphosphine oxide of formula (I) and its process for preparation;
Group II – claims 2, 4, 6, 7 and 8, drawn to an acylphosphine oxide of formula (II);
Group III – claims 3, 4, 9, 10 and 11, drawn to an acylphosphine oxide of formula (III);
Group IV – claims 12-17, drawn to compositions comprising an acylphosphine initiator; and
Group V – claim 18, drawn to a method of use.

Further, the Examiner requires an election of species. Applicants elect to prosecute the invention of Group and direct the Examiner to the compound of Example 2



for the species requirement.

Claims 2 and 3 have been amended to exclude selected compounds by proviso. Applicants are permitted to exclude from their claims that which they were not the first to invent.

Respectfully submitted,

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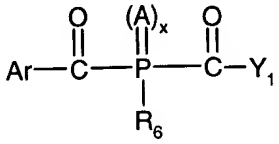
Amended Claims with underlining and bracketing

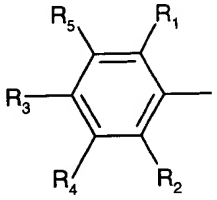
2. (amended) A compound of the formula II



(II), in which

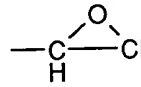
A is O or S;

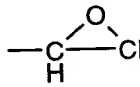
x is 0 or 1;

Ar is a group  ; or Ar is cyclopentyl, cyclohexyl, naphthyl, anthracyl, biphenylyl or an O-, S- or N-containing 5- or 6-membered heterocyclic ring, where the radicals cyclopentyl, cyclohexyl, naphthyl, anthracyl, biphenylyl and 5- or 6-membered heterocyclic ring are unsubstituted or substituted by halogen, C_1-C_4alkyl and/or C_1-C_4alkoxy;

R_1 and **R_2** independently of one another are C_1-C_{20}alkyl, OR_{11}, CF_3 or halogen;

R_3, **R_4** and **R_5** independently of one another are hydrogen, C_1-C_{20}alkyl, OR_{11} or halogen;
or in each case two of the radicals R_1, R_2, R_3, R_4 and R_5 together form C_1-C_{20}alkylene which can be interrupted by O, S or -NR_{14};

R_6 is C_1-C_{24}alkyl, unsubstituted or substituted by C_5-C_{24}cycloalkenyl, phenyl, CN, $C(O)R_{11}$, $C(O)OR_{11}$, $C(O)N(R_{14})_2$, $OC(O)R_{11}$, $OC(O)OR_{11}$, $N(R_{14})C(O)N(R_{14})$, $OC(O)NR_{14}$, $N(R_{14})C(O)OR_{11}$, cycloalkyl, halogen, OR_{11}, SR_{11}, $N(R_{12})(R_{13})$ or  ;

C_2-C_{24}alkyl which is interrupted once or more than once by nonconsecutive O, S or NR_{14} and which is unsubstituted or substituted by phenyl, OR_{11}, SR_{11}, $N(R_{12})(R_{13})$, CN, $C(O)R_{11}$, $C(O)OR_{11}$, $C(O)N(R_{14})_2$ and/or  ;

C_2-C_{24}alkenyl which is uninterrupted or interrupted once or more than once by nonconsecutive O, S or NR_{14} and which is unsubstituted or substituted by OR_{11}, SR_{11} or $N(R_{12})(R_{13})$;

C_5-C_{24}cycloalkenyl which is uninterrupted or interrupted once or more than once by nonconsecutive O, S or NR_{14} and which is unsubstituted or substituted by OR_{11}, SR_{11} or $N(R_{12})(R_{13})$;

C_7-C_{24}arylalkyl which is unsubstituted or substituted on the aryl group by C_1-C_{12}alkyl, C_1-C_{12}alkoxy or halogen;

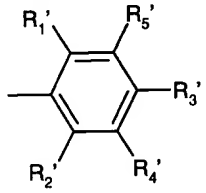
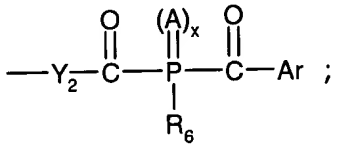
C_4-C_{24}cycloalkyl which is uninterrupted or interrupted once or more than once by O, S and/or NR_{14} and which is unsubstituted or substituted by OR_{11}, SR_{11} or $N(R_{12})(R_{13})$; or C_8-C_{24}arylcycloalkyl or C_8-C_{24}arylcycloalkenyl;

R_{11} is H, C_1-C_{20}alkyl, C_2-C_{20}alkenyl, C_3-C_8cycloalkyl, phenyl, benzyl or C_2-C_{20}alkyl which is interrupted once or more than once by nonconsecutive O atoms and which is unsubstituted or substituted by OH and/or SH;

R_{12} and **R_{13}** independently of one another are hydrogen, C_1-C_{20}alkyl, C_3-C_8cycloalkyl, phenyl, benzyl or C_2-C_{20}alkyl which is interrupted once or more than once by O or S and which is unsubstituted or

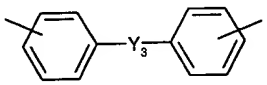
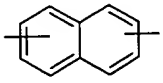
substituted by OH and/or SH; or R_{12} and R_{13} together are C_3-C_5alkylene which is uninterrupted or interrupted by O, S or NR_{14};

Y_1 is C_1-C_{18}alkyl which is unsubstituted or substituted by one or more phenyl; C_1-C_{18}-halogenoalkyl; C_2-C_{18}alkyl which is interrupted once or more than once by O or S and which can be substituted by OH and/or SH; unsubstituted C_3-C_{18}cycloalkyl or C_3-C_{18}cycloalkyl substituted by C_1-C_{20}alkyl, OR_{11}, CF_3 or halogen; C_2-C_{18}alkenyl; or Y_1 is OR_{11}, $N(R_{12})(R_{13})$ or one of the radicals

or Y_1 is cyclopentyl, cyclohexyl, naphthyl, anthracyl, biphenylyl or an O-, S- or N-containing 5- or 6-membered heterocyclic ring, where the radicals cyclopentyl, cyclohexyl, naphthyl, anthracyl, biphenylyl and 5- or 6-membered heterocyclic ring are unsubstituted or substituted by halogen, C_1-C_4alkyl and/or C_1-C_4alkoxy;

Y_2 is a direct bond; unsubstituted or phenyl-substituted C_1-C_{18}alkylene; unsubstituted C_4-C_{18}-cycloalkylene or C_4-C_{18}cycloalkylene substituted by C_1-C_{12}alkyl, OR_{11}, halogen and/or phenyl; unsubstituted C_5-C_{18}cycloalkenylene or C_5-C_{18}cycloalkenylene substituted by C_1-C_{12}alkyl, OR_{11}, halogen and/or phenyl; unsubstituted phenylene or phenylene substituted one to four times by C_1-C_{12}alkyl, OR_{11}, halogen, $-(CO)OR_{14}$, $-(CO)N(R_{12})(R_{13})$ and/or phenyl;

or Y_2 is a radical  or  , where these radicals are unsubstituted or are substituted one to four times on one or both aromatic ring(s) by C_1-C_{12}alkyl, OR_{11}, halogen and/or phenyl;

Y_3 is O, S, SO, SO_2, CH_2, $C(CH_3)_2$, $CHCH_3$, $C(CF_3)_2$, CO or a direct bond;

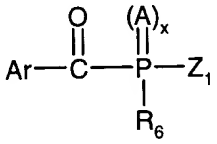
R_{14} is hydrogen, phenyl, C_1-C_{12}alkyl or C_2-C_{12}alkyl which is interrupted once or more than once by O or S and which can be substituted by OH and/or SH;

R_1' and R_2' independently of one another have the same meanings as given for R_1 and R_2; and

R_3', R_4' and R_5' independently of one another have the same meanings as given for R_3, R_4 and R_5; or in each case two of the radicals R_1', R_2', R_3', R_4' and R_5' together form C_1-C_{20}alkylene which may be interrupted by O, S or $-NR_{14}$;

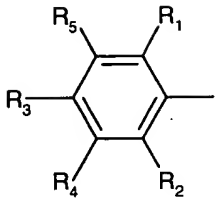
with the proviso that Y_1 is not identical to Ar and wherein the compounds n-butyl-(2,6-dimethoxybenzoyl)-(2,4,6-trimethylbenzoyl) phosphine oxide, i-butyl-(2,6-dimethoxybenzoyl)-(2,4,6-trimethylbenzoyl) phosphine oxide and (2,6-dimethoxybenzoyl)-(2,6-dimethylbenzoyl)-(2,4,4-trimethylpentyl) phosphine oxide are excluded.

3. (amended) A compound of the formula III

 (III), in which

A is O or S;

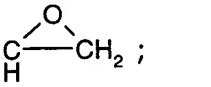
x is 0 or 1;

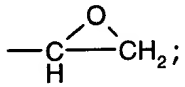
Ar is a group  ; or Ar is cyclopentyl, cyclohexyl, naphthyl, anthracyl, biphenylyl or an O-, S- or N-containing 5- or 6-membered heterocyclic ring, where the radicals cyclopentyl, cyclohexyl, naphthyl, anthracyl, biphenylyl and 5- or 6-membered heterocyclic ring are unsubstituted or substituted by halogen, C_1-C_4alkyl and/or C_1-C_4alkoxy;

R_1 and **R_2** independently of one another are C_1-C_{20}alkyl, OR_{11}, CF_3 or halogen;

R_3, **R_4** and **R_5** independently of one another are hydrogen, C_1-C_{20}alkyl, OR_{11} or halogen;

or in each case two of the radicals R_1, R_2, R_3, R_4 and R_5 together form C_1-C_{20}alkylene which can be interrupted by O, S or -NR_{14};

R_6 is C_1-C_{24}alkyl, unsubstituted or substituted by C_5-C_{24}cycloalkenyl, phenyl, CN, $C(O)R_{11}$, $C(O)OR_{11}$, $C(O)N(R_{14})_2$, $OC(O)R_{11}$, $OC(O)OR_{11}$, $N(R_{14})C(O)N(R_{14})$, $OC(O)NR_{14}$, $N(R_{14})C(O)OR_{11}$, cycloalkyl, halogen, OR_{11}, SR_{11}, $N(R_{12})(R_{13})$ or  ;

C_2-C_{24}alkyl which is interrupted once or more than once by nonconsecutive O, S or NR_{14} and which is unsubstituted or substituted by phenyl, OR_{11}, SR_{11}, $N(R_{12})(R_{13})$, CN, $C(O)R_{11}$, $C(O)OR_{11}$, $C(O)N(R_{14})_2$ and/or  ;

C_2-C_{24}alkenyl which is uninterrupted or interrupted once or more than once by nonconsecutive O, S or NR_{14} and which is unsubstituted or substituted by OR_{11}, SR_{11} or $N(R_{12})(R_{13})$;

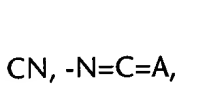
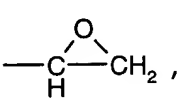
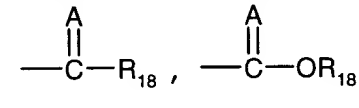
C_5-C_{24}cycloalkenyl which is uninterrupted or interrupted once or more than once by nonconsecutive O, S or NR_{14} and which is unsubstituted or substituted by OR_{11}, SR_{11} or $N(R_{12})(R_{13})$;

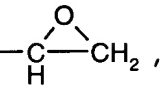
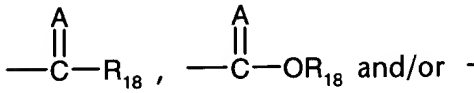
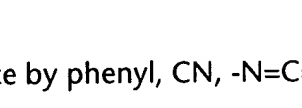
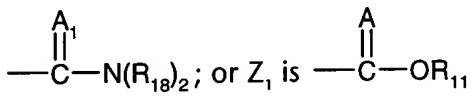
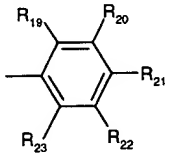
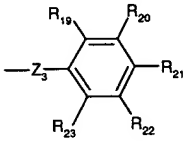
C_7-C_{24}arylalkyl which is unsubstituted or substituted on the aryl group by C_1-C_{12}alkyl, C_1-C_{12}alkoxy or halogen;

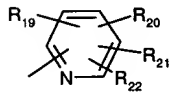
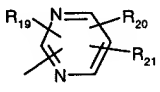
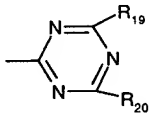
C_4-C_{24}cycloalkyl which is uninterrupted or interrupted once or more than once by O, S and/or NR_{14} and which is unsubstituted or substituted by OR_{11}, SR_{11} or $N(R_{12})(R_{13})$; or C_8-C_{24}arylcycloalkyl or C_8-C_{24}arylcycloalkenyl;

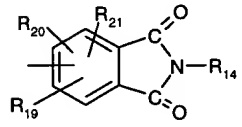
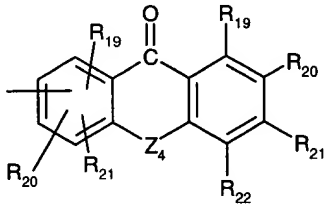
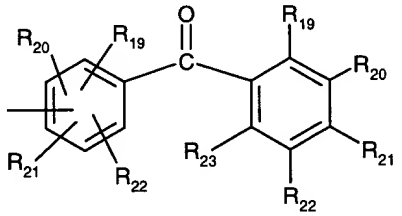
R_{11} is H, C_1-C_{20}alkyl, C_2-C_{20}alkenyl, C_3-C_8cycloalkyl, phenyl, benzyl or C_2-C_{20}alkyl which is interrupted once or more than once by nonconsecutive O atoms and which is unsubstituted or substituted by OH and/or SH;

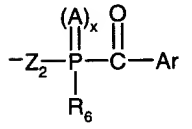
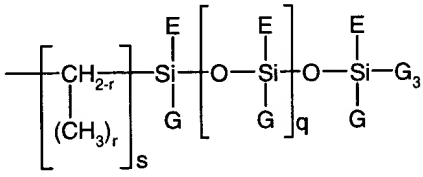
R_{12} and **R_{13}** independently of one another are hydrogen, C_1-C_{20}alkyl, C_3-C_8cycloalkyl, phenyl, benzyl or C_2-C_{20}alkyl, which is interrupted once or more than once by O or S and which is unsubstituted or substituted by OH and/or SH; or R_{12} and R_{13} together are C_3-C_5alkylene which is uninterrupted or interrupted by O, S or NR_{14};

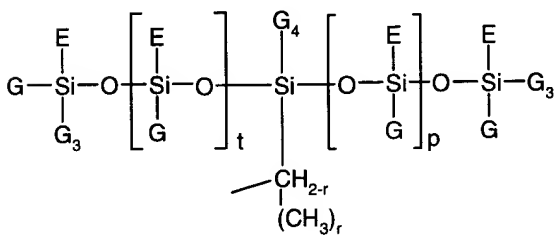
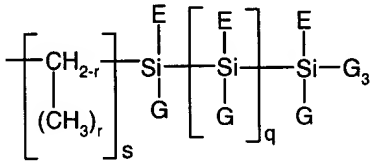
Z_1 is C_1-C_{24}alkyl, which is unsubstituted or substituted once or more than once by OR_{15}, SR_{15}, $N(R_{16})(R_{17})$, phenyl, halogen, CN, -N=C=A,  ,  , 

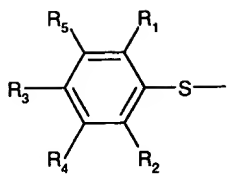
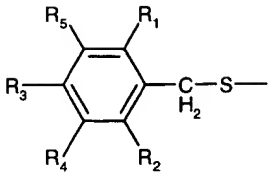
and/or or Z_1 is C_2-C_{24}alkyl which is interrupted once or more than once by O, S or NR_{14} and which can be substituted by OR_{15}, SR_{15}, $N(R_{16})(R_{17})$, phenyl, halogen,  ,  and/or ; or Z_1 is C_1-C_{24}alkoxy, which is substituted once or more than once by phenyl, CN, -N=C=A,  and/or  ; or Z_1 is , , or ; or Z_1 is unsubstituted C_3-C_{24}cycloalkyl or C_3-C_{24}cycloalkyl substituted by C_1-C_{20}alkyl, OR_{11}, CF_3 or halogen; unsubstituted C_2-C_{24}alkenyl or C_2-C_{24}alkenyl substituted by C_6-C_{12}aryl, CN, $(CO)OR_{15}$ or $(CO)N(R_{18})_2$; or Z_1 is C_3-C_{24}cycloalkenyl or is one of the radicals  (f),  (g),

 (h),  (i),  (k),

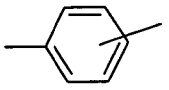
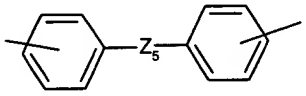
 (l),  (m),  (n),

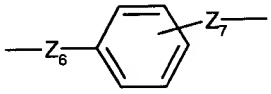
 (o),  (p),

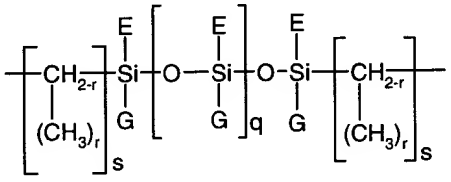
 (q),  (t),

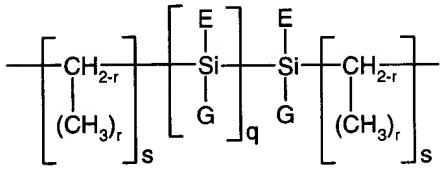
 (v) or  (w); or Z_1 is C_1-C_{24}alkylthio, in which the alkyl radical is uninterrupted or interrupted once or more than once by nonconsecutive O or S, and is unsubstituted or substituted by OR_{15}, SR_{15} and/or halogen; with the proviso that Z_1 and R_6 are not identical;

A_1 is O, S or NR_{18a};

Z_2 is C_1-C_{24}alkylene; C_2-C_{24}alkylene interrupted once or more than once by O, S or NR_{14}; C_2-C_{24}alkenylene; C_2-C_{24}alkenylene interrupted once or more than once by O, S or NR_{14}; C_3-C_{24}cycloalkylene; C_3-C_{24}cycloalkylene interrupted once or more than once by O, S or NR_{14}; C_3-C_{24}cycloalkylene;C_3-C_{24}cycloalkenylene interrupted once or more than once by O, S or NR_{14};
where the radicals C_1-C_{24}alkylene, C_2-C_{24}alkylene, C_2-C_{24}alkenylene, C_3-C_{24}cycloalkylene and C_3-C_{24}cycloalkenylene are unsubstituted or are substituted by OR_{11}, SR_{11}, $N(R_{12})(R_{13})$ and/or halogen; or Z_2 is one of the radicals  , 

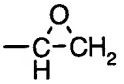
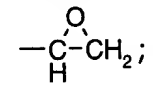
or  , where these radicals are unsubstituted or are substituted on the aromatic by C_1-C_{20}alkyl; C_2-C_{20}alkyl which is interrupted once or more than once by nonconsecutive O atoms and which is unsubstituted or substituted by OH and/or SH; OR_{11}, SR_{11}, $N(R_{12})(R_{13})$, phenyl, halogen, NO_2, CN, (CO)-OR_{11}, (CO)-R_{11}, (CO)-$N(R_{12})(R_{13})$, SO_2R_{24}, OSO_2R_{24}, CF_3 and/or CCl_3;

or Z_2 is a group  (r) or

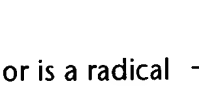
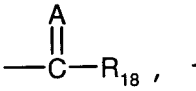
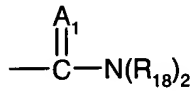
 (u);

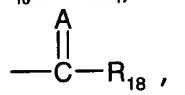
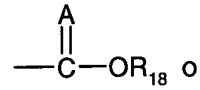
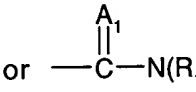
Z_3 is CH_2, CH(OH), $CH(CH_3)$ or $C(CH_3)_2$;
Z_4 is S, O, CH_2, C=O, NR_{14} or a direct bond;
Z_5 is S, O, CH_2, $CHCH_3$, $C(CH_3)_2$, $C(CF_3)_2$, SO, SO_2, CO;
Z_6 and Z_7 independently of one another are CH_2, $CHCH_3$ or $C(CH_3)_2$;
r is 0, 1 or 2;
s is a number from 1 to 12;
q is a number from 0 to 50;
t and **p** are each a number from 0 to 20;

E, **G**, G_3 and G_4 independently of one another are unsubstituted C_1-C_{12}alkyl or C_1-C_{12}alkyl substituted by halogen, or are unsubstituted phenyl or phenyl substituted by one or more C_1-C_4alkyl; or are C_2-C_{12}alkenyl;

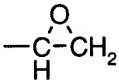
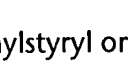
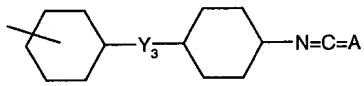
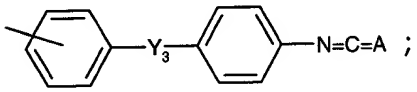
R_{11a} is C_1-C_{20}alkyl substituted once or more than once by OR_{15} or  ; or is C_2-C_{20}alkyl which is interrupted once or more than once by nonconsecutive O atoms and is unsubstituted or substituted once or more than once by OR_{15}, halogen or  ; or R_{11a} is C_2-C_{20}alkenyl, C_3-C_{12}alkynyl; or R_{11a} is C_3-C_{12}cycloalkenyl which is substituted once or more than once by halogen, NO_2, C_1-C_6alkyl, OR_{11} or $C(O)OR_{18}$; or C_7-C_{16}arylalkyl or C_8-C_{16}arylcycloalkyl;

R_{14} is hydrogen, phenyl, C_1-C_{12}alkoxy, C_1-C_{12}alkyl or C_2-C_{12}alkyl which is interrupted once or more than once by O or S and which is unsubstituted or substituted by OH and/or SH;

R_{15} has one of the meanings given for R_{11} or is a radical  ,  or  ;

R_{16} and R_{17} independently of one another have one of the meanings given for R_{12} or are a radical  ,  or  ;

R_{18} is hydrogen, C_1-C_{24}alkyl, C_2-C_{12}alkenyl, C_3-C_8cycloalkyl, phenyl, benzyl; C_2-C_{20}alkyl which is interrupted once or more than once by O or S and which is unsubstituted or substituted by OH;

R_{18a} and R_{18b} independently of one another are hydrogen; C_1-C_{20}alkyl, which is substituted once or more than once by OR_{15}, halogen, styryl, methylstyryl, -N=C=A or  ; or C_2-C_{20}alkyl, which is interrupted once or more than once by nonconsecutive O atoms and which is unsubstituted or substituted once or more than once by OR_{15}, halogen, styryl, methylstyryl or  ; or R_{18a} and R_{18b} are C_2-C_{12}alkenyl; C_5-C_{12}cycloalkyl, which is substituted by -N=C=A or -CH_2-N=C=A and is additionally unsubstituted or substituted by one or more C_1-C_4alkyl; or R_{18a} and R_{18b} are C_6-C_{12}aryl, unsubstituted or substituted once or more than once by halogen, NO_2, C_1-C_6alkyl, C_2-C_4alkenyl, OR_{11}, -N=C=A, -CH_2-N=C=A or $C(O)OR_{18}$; or R_{18a} and R_{18b} are C_7-C_{16}arylalkyl; or R_{18a} and R_{18b} together are C_8-C_{16}arylcycloalkyl; or R_{18a} and R_{18b} independently of one another are  or  ;

Y_3 is O, S, SO, SO_2, CH_2, $C(CH_3)_2$, $CHCH_3$, $C(CF_3)_2$, (CO), or a direct bond;

R_{19}, R_{20}, R_{21}, R_{22} and R_{23} independently of one another are hydrogen, C_1-C_{20}alkyl; C_2-C_{20}alkyl, which is interrupted once or more than once by nonconsecutive O atoms and which is unsubstituted or substituted by OH and/or SH; or R_{19}, R_{20}, R_{21}, R_{22} and R_{23} are OR_{11}, SR_{11}, $N(R_{12})(R_{13})$, NO_2, CN, SO_2R_{24},

OSO_2R_{24}, CF_3, CCl_3, halogen; or phenyl which is unsubstituted or substituted once or more than once by C_1-C_4alkyl or C_1-C_4alkoxy;
or in each case two of the radicals R_{19}, R_{20}, R_{21}, R_{22} and R_{23} together form C_1-C_{20}alkylene which is uninterrupted or interrupted by O, S or $-NR_{14}$;
R_{24} is C_1-C_{12}alkyl, halogen-substituted C_1-C_{12}alkyl, phenyl, or phenyl substituted by OR_{11} and/or SR_{11};
with the proviso that R_6 and Z_1 are not identical and wherein the compounds benzyl-n-butyl-(2,6-dimethoxybenzoyl) phosphine oxide and benzyl-n-butyl-(2,4,6-trimethylbenzoyl) phosphine oxide are excluded.